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ABSTRACT

Certain guiding principles emerged from a century of research on teaching and learning. Many of those principles arise from research and practice in various areas of psychology. Learner-centered psychological principles and a systems perspective for incorporating them are necessary components of a new design for schooling. Among metacognitive and cognitive factors that influence schooling are the nature of the learning process itself, the goals of the learning process, the construction of knowledge, and higher order thinking. Student motivation is the most significant affective factor influencing schooling. Developmental constraints and opportunities provide another source of the factors affecting schooling. Social and individual factors also enter into the equation. Such factors and others have implications for school reform and redesign. All contribute to the effectiveness of instruction, curriculum, assessment, instructional management, teacher education, and parental and community involvement. Any improvement in education must encompass a program of learner centered assessment that requires high standards for each student and for each goal, individually negotiated by student and teacher. (SG)

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Learner-centered psychological principles: Guidelines for school redesign and reform

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Foreword

The *Learner-Centered Psychological Principles* were developed in a collaborative partnership between the American Psychological Association (APA) and the Mid-continent Regional Educational Laboratory (McREL). The work of this partnership was carried out by the APA President's Task Force on Psychology in Education (PsyEd), which was established in 1990 by the APA Board of Directors and the then APA president-elect, Charles D. Spielberger. Frank Farley, Nadine M. Lambert, and Barbara L. McCombs have served with Spielberger as the PsyEd Task Force co-chairs. C. Larry Hutchins, Executive Director of McREL, was the principal educational consultant to the task force.

Barbara L. McCombs, Director of Motivation and Human Development at McREL, developed the initial draft and subsequent revisions of the *Principles* document. She was assisted in revising and refining the *Principles* by the co-chairs and other members of the PsyEd Task Force, who included Cynthia G. Baum, Henry C. Ellis, James J. Gallagher, Wayne H. Holtzman, Howard M. Knoff, Harold F. O'Neil, Jr., Sylvia A. Rosenfield, and Thomas J. Shuell.

The initial draft of the *Principles* was prepared in March of 1991. Circulation of the first and subsequent drafts to a wide range of psychologists, educators, and professionals in various scientific disciplines has resulted in this final revision. Although we received very favorable comments from almost everyone who responded with suggestions for revision, some reviewers noted that the language was somewhat technical and suggested that the document would be improved by simplifying the presentation to make it more readily accessible for use by teachers and other professionals. The task force is now in the process of creating a "user friendly" version with less technical language for nonpsychologists.

We are very grateful to the following colleagues, who have contributed significantly to the *Principles* by their comments and suggestions for revisions of earlier drafts: Larry A. Alferink, Harry P. Bahrick, David C. Berliner, Emmanuel M. Bernstein, Fran C. Blumberg, Barbara L. Bonner, James P. Connell, Eric L. Dlugokinski, Darwin P. Hunt, Beau F. Jones, Lewis P. Lipsitt, Hermine H. Marshall, Adah B. Maurer, Diane McGuinness, Roger C. Mills, Clark E. Moustakas, David N. Perkins, Louisa H. Pierson, Donald K. Pumroy, D. Scott Ridley, Jerome D. Stiller, C. E. Walker, Claire E. Weinstein, Jo Sue Whisler, Merlin C. Wittrock, and Philip G. Zimbardo. The task force extends its special thanks to Martin E. Ford, Chair of the Psychological Studies in Education Program at Stanford University, for his significant contribution to the editing of this draft and to Scott G. Paris, Professor of Developmental Psychology at the University of Michigan, for developing some of the learner-centered principles of assessment that are included as part of the final section of this document.

In addition to the contributions of psychologists and educators just noted, we have received favorable comments from representatives of a wide range of professional groups. We are grateful to the following individuals and organizations for their feedback:

Ronald S. Brandt, Executive Editor, Association for Supervision and Curriculum Development (ASCD);

Bonnie J. Brunkhorst, Retiring President, National Science Teachers Association (NSTA);

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Pat Cox, Project Director, Regional Laboratory for Educational Improvement (REI) of the Northeast and Islands;

Robert E. Fathman, Chairman, National Coalition to Abolish Corporal Punishment in Schools (NCACPS);

Shirley M. Frye, Past President, National Council of Teachers of Mathematics (NCTM);

Gary D. Fullerton, President, American Association of Physicists in Medicine (AAPM);

John A. Gans, Executive Vice President, American Pharmaceutical Association (APhA);

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James D. Hennes, Curriculum and Evaluation, Colorado Department of Education;

Rosalie S. Humphrey, President Elect, American School Counselor Association (ASCA);

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Louis A. Iozzi, Dean, Academic and Student Affairs, Rutgers University;

Michael J. Jackson, Executive Director, Federation of American Societies for Experimental Biology (FASEB);

Mechelle R. LaWarre, President, APhA Academy of Students of Pharmacy, American Pharmaceutical Association (AphA);

Leon M. Lederman, Chairman of Board of Directors, American Association for the Advancement of Science (AAAS), and Director Emeritus, Fermi National Accelerator Laboratory (Fermilab);

James F. Marran, Co-Chair of the Teaching and Learning Task Force of the National Council for the Social Studies (NCSS);

Margit E. McGuire, President, National Council for the Social Studies (NCSS);

Patricia J. McWethy, Executive Director, National Association of Biology Teachers (NABT);

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Nancy S. Perry, President, American School Counselor Association (ASCA);

Terrence K. Quinn, Principal and Member of the Board of Education of the City of New York;

Samuel G. Sava, Executive Director, National Association of Elementary School Principals (NAESP);

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Carol E. Smith, Senior Director, Professional Issues, American Association of Colleges for Teacher Education (AACTE);

Marilyn M. Smith, Executive Director, National Association for the Education of Young Children (NAEYC);

Philip M. Smith, Executive Officer, National Research Council (NRC);

Dennis Sparks, Executive Director, National Staff Development Council (NSDC);

Richard W. Traxler, Chair, Education Committee, Society for Industrial Microbiology (SIM);

Carl E. Trinca, Executive Director, American Association of Colleges of Pharmacy (AACP);

Sylvia A. Ware, Director, Education Division, American Chemical Society (ACS);

Gary D. Watts, Senior Director, National Education Association (NEA); and
Ellen C. Weaver, Chair, Education Committee, American Society of Plant Physiologists (ASPP).

Although the *Principles* have received extensive review, we view this as an evolving document and welcome further comments concerning possible omissions or areas that require consideration in future revisions. In addition, we would like to learn about specific applications and ways in which you have found these principles to be useful to your own work or programs. Please send your comments to Office of Psychology in Education, Education Directorate, American Psychological Association, 750 First Street, NE, Washington, DC 20002-4242.

Preamble

American education is broadly viewed as a system in crisis. To overcome this crisis, the nation's president has set forth ambitious goals for education, and many efforts are under way to redesign and reform our educational system. The American Psychological Association (APA) is committed to making a unique contribution to these efforts. We focus attention on learner-centered principles that can provide the foundation for improving the quality of teaching and learning in America's schools.

The principles contained in this document, many of them already implemented in exemplary classrooms, represent both an ideal vision and cumulative experience that will continue to evolve through research. Our objective is to provide useful information consistent with research generated by psychologists and educators in the areas of learning, motivation, and human development. Use of these principles in reforming education will serve shared goals: educational excellence, with a focus on the individual learner.

Conversely, educational reform efforts that do not take these principles into account will surely fail.

Background

Throughout its history, psychology has provided vital information for the design of schooling based on theory and research on human nature, learning, and development. Research in psychology relevant to education has never been more productive than during the past 10 years. Advances in our understanding of thinking, memory, and cognitive and motivational processes can directly contribute to improvements in teaching, learning, and the whole enterprise of schooling. At the same time, educators concerned with the growing problems of school dropout, low levels of academic achievement, and other indicators of school failure are arguing for more learner-centered models of schooling. Such models attend to the diversity among students and use it to enrich learning and produce results within the context of current school reform.

The following principles, which are consistent with more than a century of research on teaching and learning, are widely shared and implicitly recognized in many excellent programs found in today's schools. They also integrate research and practice in various areas of psychology, including clinical, developmental, experimental, social, organizational, community, educational, and school psychology, as well as in education, sociology, anthropology, and philosophy. In addition, these principles reflect conventional and scientific wisdom: They comprise not only those systematically researched and evolving learner-centered principles that can lead to effective schooling but also principles that can lead to positive mental health and more effective functioning of our nation's children, their teachers, and the systems that serve them.

Learner-centered psychological principles and a systems perspective for incorporating them are necessary components of a new design for schooling. The systems perspective must focus on human functions at multiple levels of the educational system (learning, teaching, evaluating, and managing). From this perspective, educational practice will improve only when the educational system is redesigned with the primary focus on the learner. Psychologists, in collaboration with educators, can help decide how best to apply sound psychological principles in the redesign of America's schools. A new and exciting vision of schooling, and psychology's role in this vision, can then emerge.

Our immediate goal in offering these learner-centered psychological principles is to provide guidelines that can contribute to current educational reform and school redesign efforts and thus help meet the nation's educational goals. Through dialogue with concerned groups of educators, researchers, and policy makers, these principles can evolve further to contribute not only to a new design for America's schools, but also to a society committed to lifelong learning, healthy human development, and productivity. In developing these principles, psychology—together with other disciplines—can offer a unique contribution to the betterment of America's schools and the enhancement of the nation's vital human resources.

6

Learner-centered psychological principles

The following 12 psychological principles pertain to the *learner* and the *learning process*. They focus on psychological factors that are primarily internal to the learner while recognizing external environment or contextual factors that interact with these internal factors. These principles also attempt to deal holistically with learners in the context of real-world learning situations. Thus, they must be understood as an organized set of principles and not be treated in isolation. The first 10 principles subdivide into those referring to *metacognitive and cognitive*, *affective*, *developmental*, and *social* factors and issues. Two final principles cut across the prior principles and focus on what psychologists know about *individual differences*. Finally, the principles are intended to apply to *all learners*, beginning with preschoolers.

Metacognitive and cognitive factors

Principle 1 The nature of the learning process. Learning is a natural process of pursuing personally meaningful goals, and it is active, volitional, and internally mediated; it is a process of discovering and constructing meaning from information and experience, filtered through the learner's unique perceptions, thoughts, and feelings.

Students have a natural inclination to learn and pursue personally relevant learning goals. They are capable of assuming personal responsibility for learning—monitoring, checking for understanding, and becoming active, self-directed learners—in an environment that takes past learning into account, ties new learning to personal goals, and actively engages students in their own learning process. In meaningful life situations, even very young children naturally engage in self-directed learning activities to pursue personal goals. During the learning process, individuals create their own meanings and interpretations on the basis of previously existing understandings and beliefs.

Principle 2 Goals of the learning process. The learner seeks to create meaningful, coherent representations of knowledge regardless of the quantity and quality of data available.

Learners generate integrated, commonsense representations and explanations for even poorly understood or communicated facts, concepts, principles, or theories. Learning processes operate holistically in the sense that internally consistent understandings emerge that may or may not be valid from an objective, externally oriented perspective. As learners internalize values and meanings within a discipline, however, they can refine their conceptions by filling in gaps, resolving inconsistencies, and revising prior conceptions.

Principle 3 The construction of knowledge. The learner links new information with existing and future-oriented knowledge in uniquely meaningful ways.

Given that backgrounds and experiences of individuals can differ dramatically, and given that the mind works to link information meaningfully and holistically, learners organize information in ways that are uniquely meaningful to them. A goal in formal education is to have all learners create shared understandings and conceptions regarding fundamental knowledge and skills that define and lead to valued learning outcomes. In these situations, teachers can assist learners in acquiring and integrating knowledge (e.g., by teaching them strategies for constructing meaning, organizing content, accessing prior knowledge, relating new knowledge to general themes or principles, storing or practicing what they have learned, and visualizing future uses for the knowledge).

Principle 4 Higher-order thinking. Higher-order strategies for "thinking about thinking"—for overseeing and monitoring mental operations—facilitate creative and critical thinking and the development of expertise.

During early to middle childhood, learners become capable of a metacognitive or executive level of thinking about their own thinking that includes self-awareness, self-inquiry or dialogue, self-monitoring, and self-regulation of the processes and contents of thoughts, knowledge structures, and memories. Learners' awareness of their personal agency or control over thinking and learning processes promotes higher levels of commitment, persistence, and involvement in learning. To foster this self-awareness of agency, learners need settings where their personal interests, values, and goals are respected and accommodated.

Affective factors

Principle 5 Motivational influences on learning. The depth and breadth of information processed, and what and how much is learned and remembered, are influenced by (a) self-awareness and beliefs about personal control, competence, and ability; (b) clarity and saliency of personal values, interests, and goals; (c) personal expectations for success or failure; (d) affect, emotion, and general states of mind; and (e) the resulting motivation to learn.

The rich internal world of beliefs, goals, expectations, and feelings can enhance or interfere with learners' quality of thinking and information processing. The relationship among thoughts, mood, and behavior underlies individuals' psychological health and ability to learn. Learners' interpretations or cognitive constructions of reality can impede positive motivation, learning, and performance, as can negative thoughts and feelings. Conversely, positive learning experiences can help reverse negative thoughts and feelings and enhance student motivation to learn.

Principle 6 Intrinsic motivation to learn. Individuals are naturally curious and enjoy learning, but intense negative cognitions and emotions (e.g., feeling insecure, worrying about failure, being self-conscious or shy, and fearing corporal punishment, ridicule, or stigmatizing labels) thwart this enthusiasm.

Educators must support and develop students' natural curiosity or intrinsic motivation to learn, rather than "fixing them" or driving them by fear of corporal punishment or excessive punishments of any kind. Also, both positive interpersonal support and instruction in self-control strategies can offset factors that interfere with optimal learning—factors such as low self-awareness; negative beliefs; lack of learning goals; negative expectations for success; and anxiety, insecurity, or pressure.

Principle 7 Characteristics of motivation-enhancing learning tasks. Curiosity, creativity, and higher-order thinking are stimulated by relevant, authentic learning tasks of optimal difficulty and novelty for each student.

Positive affect, creativity, and flexible and insightful thinking are promoted in contexts that learners perceive as personally relevant and meaningful. For example, students need opportunities to make choices in line with their interests and to have the freedom to change the course of learning in light of self-awareness, discovery, or insights. Projects that are comparable to real-world situations in complexity and duration elicit students' higher-order thinking skills and creativity. In addition, curiosity is enhanced when students can work on personally relevant learning tasks of optimal difficulty and novelty.

Developmental factors

Principle 8 Developmental constraints and opportunities. Individuals progress through stages of physical, intellectual, emotional, and social development that are a function of unique genetic and environmental factors.

Children learn best when material is appropriate to their developmental level and is presented in an enjoyable and interesting way, while challenging their intellectual, emotional, physical, and social development. Unique environmental factors (e.g., the quality of language interactions between adult and child and parental involvement in the child's schooling) can influence development in each area. An overemphasis on developmental readiness, however, may preclude learners from demonstrating that they are more capable intellectually than schools, teachers, or parents allow them to show. Awareness and understanding of developmental differences of children with special emotional, physical or intellectual disabilities as well as special abilities can greatly facilitate efforts to create optimal contexts for learning.

Personal and social factors

Principle 9 Social and cultural diversity. Learning is facilitated by social interactions and communication with others in flexible, diverse (in age, culture, family background, etc.), and adaptive instructional settings.

Learning is facilitated when the learner has an opportunity to interact with various students representing different cultural and family backgrounds, interests, and values. Learning settings that allow for and respect diversity encourage flexible thinking as well as social competence and moral development. In such settings, individuals have an opportunity for perspective taking and reflective thinking, thereby leading to insights and breakthroughs to new knowledge.

Principle 10 Social acceptance, self-esteem, and learning. Learning and self-esteem are heightened when individuals are in respectful and caring relationships with others who see their potential, genuinely appreciate their unique talents, and accept them as individuals.

Quality personal relationships give the individual access to higher-order, healthier levels of thinking, feeling, and behaving. Teachers' (or other significant adults') states of mind, stability, trust, and caring are preconditions for establishing a sense of belonging, self-respect, self-acceptance, and positive climate for learning. Healthier levels of thinking are those that are less self-conscious, insecure, irrational, and self-deprecating. Self-esteem and learning are mutually reinforcing.

Principle 11 Individual differences in learning. Although basic principles of learning, motivation, and effective instruction apply to all learners (regardless of ethnicity, race, gender, physical ability, religion, or socioeconomic status), learners have different capabilities and preferences for learning mode and strategies. These differences are a function of environment (what is learned and communicated in different cultures or other social groups) and heredity (what occurs naturally as a function of genes).

The same basic principles of learning, motivation, and effective instruction apply to all learners. However, individuals are born with and develop unique capabilities and talents and have acquired through learning and social acculturation different preferences for how they like to learn and the pace at which they learn. Also, student differences and curricular and environmental conditions are key factors that greatly affect learning outcomes. Understanding and valuing cultural differences and the cultural contexts in which learners develop enhances the possibilities for designing and implementing learning environments that are optimal for all students.

Principle 12 Cognitive filters. Personal beliefs, thoughts, and understandings resulting from prior learning and interpretations become the individual's basis for constructing reality and interpreting life experiences.

Unique cognitive constructions form a basis for beliefs and attitudes about others. Individuals then operate out of these "separate realities" as if they were true for everyone, often leading to misunderstandings and conflict. Awareness and understanding of these phenomena allow greater choice in what one believes and more control over the degree to which one's beliefs influence one's actions and enable one to see and take into account others' points of view. The cognitive, emotional, and social development of a child and the way that child interprets life experiences are a product of prior schooling, home, culture, and community factors.

10

Implications for school redesign and reform

The foregoing principles have implications for educational practice in the areas of instruction, curriculum, assessment, instructional management, teacher education, parent and community roles, and educational policy. Some of these implications are listed in the following sections to provide examples that are consistent with the learner-centered principles. They are intended to stimulate further thinking, discussion, and elaboration of ideas toward developing new designs for education.

Instruction

Effective instruction

- Involves students in their own learning, with opportunities for teacher and peer interactions that engage students' natural curiosity and opportunities for personal reflection and self-study;
- Encourages students to link prior knowledge with new information by providing multiple ways of presenting information (e.g., auditory, visual, and kinesthetic).
- Attends to the *content* of curriculum domains and to generalized and domain-specific *processes* that facilitate the acquisition and integration of knowledge in these domains; and
- Includes constructive and informative feedback regarding the learner's instructional approach and products, as well as sufficient opportunities to practice applying new knowledge and skills to developmentally appropriate levels of mastery.
- Offers opportunities for acquiring and practicing various learning strategies in different content domains to help students develop and effectively use their minds while learning;
- Encourages problem solving, planning, complex decision making, debates, group discussions, and other strategies that enhance the development of higher-order thinking and use of metacognitive strategies;
- Helps students understand and respect individual differences by learning principles of thinking and psychological functioning and how these operate in building attitudes and belief systems about others;
- Enables learners to plan future directions and apply what they learn;
- Maintains fair, consistent, and caring policies that respect the individual by focusing on individual mastery and cooperative teamwork rather than on competitive performance goals; and
- Ensures that all students have experience with (a) teachers interested in their area of instruction, (b) teachers who respect and value them as individuals, (c) positive role modeling and mentoring, (d) constructive and regular evaluations, (e) optimistic teacher expectations, and (f) use of questioning skills to actively involve them in learning.

Curriculum

Effective curricula

- Attend to affect and mood as well as cognition and thinking in all learning activities and experiences, thereby totally engaging the learner;
- Include assessments from students and teachers to check for student understanding of the subject matter, including implications and applications of knowledge.
- Have an affective and cognitive richness that helps students generate positive thoughts and feelings of excitement and interest;
- Help students engage in higher-order thinking and practice metacognitive strategies, including reflective self-awareness and goal setting;
- Help students to be more aware of their own psychological functioning and how it relates to their own learning;

- Include authentic (relevant to the real world) tasks and assessments that help students integrate information and performance across subject matter disciplines while allowing students to choose levels of difficulty for challenge or novelty;
- Are developmentally appropriate to the intellectual, emotional, physical, and social characteristics of the individual;
- Help students increase awareness and understanding of how thought processes operate to produce separate, self-confirming realities so that they can better understand different individuals, as well as different social and religious groups;
- Encourage students to see positive qualities in all groups of learners, regardless of race, sex, culture, physical ability, or other individual differences; and
- Include activities that promote empathy and understanding, respect for individual differences, and valuing of different perspectives, including materials from a multicultural perspective.

Assessment

Effective assessment

- Is integrated with instruction to continue learning progress and is authentic in content and performance requirements;
- Measures personal progress and achievement, rather than comparing an individual's performance with the performance of others, and fosters personal learning goals;
- Redefines *success*; standards should be based not on competition, but on self-selected or collaborative learning goals that promote self-generated solutions;
- Enables students to make various choices, including the types of products for demonstrating achievement of educational standards;
- Measures student growth and allows for the highest levels of performance on developmentally appropriate standards; standards are formulated in such a way that every student has an opportunity to excel at something; and
- Promotes students' self-reflection on their growth by providing opportunities for self-assessment and thoughtful feedback on learning progress.

Instructional management

Effective schools and classrooms

- Accommodate mentoring and make time and physical space and facilities for students to pursue their learning goals and activities;
- Are prepared to present materials at different developmental levels to children of the same age;
- Encourage cooperation and respect for diversity and individual differences and discourage practices that are not inclusive of all learners;
- Accommodate differences in intelligence and special talents in the artistic, musical, spatial, physical, and social domains;
- Provide alternative technologies or paths to learning for students with special needs (e.g., total communication systems for hearing impairments, Braille systems for visual impairments, argumentative communication for multiple impairments) and teachers qualified to use them;
- Provide support systems for students and teachers to deal constructively with expectations to master challenging curricula and exhibit quality performance (e.g., through individual attention and support groups); and
- Meet the needs of the whole child (emotional, intellectual, social, physical) by provid-

ing integrated physical health, mental health, and social services in addition to academic services.

Effective learning environments

- Encourage student choice in areas such as topics of learning, types of projects on which to work and whether to learn independently or in groups;
- Are flexible in matching individual student needs with variations in instructional format and processes, including content, organization, strategies, and social settings;
- Emphasize respect and acceptance of differences and discourage stigmatizing practices such as labeling, ability grouping, or grade level retention;
- Include the flexible and creative use of cross-age and peer-tutoring models. Effective curricula avoid grade-level materials that are too easy for fast-learning students and too difficult for slow-learning students; and
- Foster quality adult-student relationships based on understanding and mutual respect; such relationships reciprocally reduce levels of stress and insecurity in teachers and students.
- Are conducive to quiet, reflective thought and to cooperative social interaction;
- Support students in developing ideas through student-centered projects and activities that promote student choice and responsibility;
- Attend to meaningful performance contexts (e.g., apprenticeship settings) wherein knowledge can be anchored to meaningful prior knowledge and experience;
- Are warm, comfortable, and supportive; they help minimize students' insecurities and promote a sense of belonging;
- Provide high standards and optimistic expectations for all students, while respecting cultural diversity, developmental variations, and other individual differences; and
- Provide for an appropriate diversity of abilities, ages, cultures, and other individual differences in grouping students.

Teacher education

Effective teacher education programs

- Include standards for teacher and staff selection that attend to attitudes and beliefs that reflect the teacher's orientation to different student groups.
- Are based on the preceding principles of learner-centered instruction in both pre- and in-service programs.
- Offer strategies for establishing positive climates for learning, including ways to handle and reverse negative thoughts and moods, in teachers and students, that interfere with teaching and learning.
- Help teachers see how their own attitudes and motivation for teaching and learning affect student motivation and learning in the classroom.
- Provide the knowledge base about the cognitive, emotional, and motivational processes that affect learning so that teachers can promote higher-order thinking and learning processes.
- Include information about general and domain-specific metacognitive strategies and how they can most effectively be taught to students of differing abilities and backgrounds.
- Encourage teachers to "think out loud" during explanations as a strategy for making problem solving explicit and transparent, thus modeling metacognitive thinking and teaching strategies for their students.
- Provide information about intellectual, emotional, physical, and social characteristics of children at various development levels, as well as methods for assessing and accommodating developmental and intellectual differences in learning ability.

- Emphasize ways to actively involve students in the learning process and to elicit the material or solutions from the students themselves in a way that is non-threatening and that will spark students' creative thinking.
- Focus on strategies for diagnosing and encouraging students' use of self-directed motivational and learning processes.
- Help teachers understand how each student learns best and to relate subject matter to each student's interests in a manner that triggers the student's curiosity and innate interest in learning.
- Include information on how to engage students' excitement and intrinsic interest in learning in a way that bypasses students' self-consciousness, concern about self-image, or need to prove themselves and without relying on external rewards that undermine natural interest in learning.
- Help teachers understand how to continually demonstrate respect and caring for students in the classroom while maintaining an organized classroom in an authoritative (as opposed to authoritarian) manner.
- Include stress management training that emphasizes principles of mind-emotion-behavior relationships and how to provide socio-emotional support.
- Include strategies for selecting curricula that provide appropriate levels of cognitive complexity and authenticity for students at different levels of development and ability.
- Help teachers become more aware of (a) the need to relate instructional content and processes to the cultural contexts of their students and (b) the differences that cultures impose on public displays of volunteering information, asking questions, asking for help, discussing personal concerns in public, and a host of other cultural values and constraints that can enrich the classroom when recognized or lead to chaos and misattributions when ignored.

Parent and community involvement

- Effective school systems will be designed through collaboration of students, teachers, counselors, administrators, parents, and community members. Once a new vision is generated, staff development is the place to start.
- Effective school systems work closely with families and subcultures in aiding student learning. Schooling is just one of many forces influencing the learning of individuals. Other dimensions of proven influence are the family, peer groups, and the subcultures with which individuals identify.
- Effective school management provides students, teachers, and parents with input into and responsibility for curriculum, rules of discipline, and other policies and practices that provide a secure and supportive climate for students and teachers.

Policy implications for learner-centered school redesign

The learner-centered principles cannot be treated in isolation when deriving policy implications. Taken together, these principles describe a new view of the learner, the learning process, and implications for instruction. It is this broader view of the whole learner and implications for instruction—including teaching, learning, and assessment—that allows for a learner-centered, systems perspective in deriving policy implications.

Policies should

- Recognize that learning can only be as enriching as the teacher's ability to foster it and the system's commitment to meeting the learner's needs. Teachers cannot automatically be

assumed capable of facilitating learning and growth without ongoing administrative efforts to support teachers' self-development in intellectual, emotional, social, and behavioral areas. Thus, policy must address ways to ensure the reciprocal empowerment of both teachers and students such that teachers feel sufficiently supported and valued and can, in turn, empower their students.

- Allow for the construction of a learning environment that adapts to individual learner needs, avoiding overly rigid and reductionistic definitions of the curriculum, specification of objectives, and schedules for when and where learning occurs. Definitions and regulations of what, when, and for how long topics are to be studied and what resources are used should be drawn in a way that maximizes the flexibility and choice students and teachers have to organize learning to meet the needs of individual children.
- Reflect the need for learners to integrate and organize knowledge in personally meaningful ways. Curriculum and assessment processes should encourage learners to see the connections between what they are asked to learn and what they already know, how information being learned relates to other subjects and disciplines, and how the knowledge is used and connects with real world situations—that is, situations that are not academically abstracted from natural phenomena and experiences. Policies should facilitate the organization of learning tasks around problem situations that integrate low- and high-literacy skills such as thinking about thinking and creative and critical thinking.
- Encourage the organization of sequences or hierarchies of learning tasks so that assessment of progress reflects the growth of the learner's skills and knowledge, not the matching of content rigidly tied to age or grade.
- Acknowledge the roles that personal beliefs about self, personal expectations about learning, and other cognitive constructions can play in learning and self-development. Furthermore, policies should acknowledge the importance of affective and cognitive development and give students the opportunity to increase their understanding of their psychological functioning (e.g., using psychological personnel to assist students in self-development).
- Encourage the creation of instructional settings that cross the full range of social mediation contexts needed for learning (e.g., working alone, working with others, and working with other groups as a member of a team. Regulations and resources should be flexible and encourage this variety of settings; policies that promote only one perspective, such as individual isolation or competition among students, should be avoided.
- Acknowledge the diversity found in the United States among individual students' interests, cultural backgrounds, motivations, and abilities. The American school program needs to be diverse in character, structure, and intent to adequately meet the needs of the full range of these learners. Using single programs, standards, and learning goals for all learners ignores the fact and value of diversity.
- Facilitate the interaction of psychology with other disciplines such that concerns relative to the psychological health and functioning of learners are considered. Interactions among disciplines and their embodiment in funding and service provider agencies can mutually enhance the knowledge base and attention to the needs of the whole (emotional, intellectual, social, and physical).
- Enable schools to provide services for all of a child's needs and for all children, allowing schools to be the locus of services with connections to other service providers. Mechanisms for facilitating school-community linkages should be considered and promoted, as well as school-family and school-business linkages.

15

Applying the learner-centered principles and their implications to issues in the assessment of student achievement

Within the current national debate on what methods should be used to assess student progress toward national educational goals, one important area in which to apply the learner-centered principles is student assessment. A central assumption is that to improve educational outcomes for all learners, one has to create a learner-centered assessment system that requires *high* standards for each student for each goal, individually negotiated by the student and the teacher. Also, a classroom instructional program is needed that helps students to achieve learner-centered standards. Assessments can be based on a variety of evidence about student achievement, which might include folios, projects, and performance. The critical difference between (a) a learner-centered assessment system based on goals and (b) standards established by the local community and implemented by teachers is that by involving learners in the process, only the learner-centered system promises consideration of the diversity of the nation's communities and school children in the redesign of schools. In this context, assessments are products—ways students have chosen to demonstrate their developing competencies and achievement of learning standards.

Assessing student performance on a task he or she is not interested in or cannot see the purpose of amounts to assessing boring curriculum and what it elicits from a student; it does not assess learning. The starting point needs to be good pedagogy and sound educational theories. The learner-centered perspective considers the learner's thoughts and feelings about learning and schooling. It emphasizes that students learn because something is meaningful to them, not because they must perform some task. Learning and performance are not the same, and they need to be distinguished in new assessment systems. The bottom line is that *students need to be consulted and involved in the design of assessment systems that serve them better*. They will learn and perform better if they see schools as relevant places in which to spend time in and if they can choose their goals and the products they will make to demonstrate their development and achievement.

Emerging learner-centered principles of assessment

The following principles of assessment can be derived from the foregoing learner-centered principles.

1. The fundamental purpose of any educational assessment of students should be to promote meaningful learning.

2. The design of standards of excellence and assessment systems should be negotiated by the participants—including parents, teachers, administrators, and students—in districts and states to ensure commitment and ownership among primary stakeholders.

3. Assessment should elicit students' genuine effort, motivation, and commitment to the goals of assessment and foster self-appraisal and self-regulated learning.

4. The strategies, skills, and knowledge required to excel on academic assessments should be the same as those required to master the curriculum on a daily basis.

5. Assessments should be based on authentic and meaningful tasks that are aligned with the regular curriculum and instruction provided in the classroom.

6. Assessment should provide credibility and legitimacy to a broad range of talents and accomplishments of students across the curriculum.

7. A single national test of academic achievement should be avoided because it cannot do justice to the diversity of students' accomplishments in this heterogeneous and multicultural society.

8. Assessments should be fair and equitable to all students regardless of prior achievement, gender, race, language, or cultural background.

9. All assessments should provide for periodic review and revision among the participants and consumers of assessment information.

10. Assessment should occur continuously in classrooms in order to provide longitudinal evidence of individual growth.

11. Assessments should measure students' motivation, attitudes, and affective reactions about the curriculum as well as their cognitive skills, strategies, and knowledge.

12. Assessments should include exhibits, portfolios, and performances to demonstrate achievement in addition to traditional paper-and-pencil tests.

13. The results of assessment should provide clear, comprehensible, and immediate feedback to the participants.

14. Assessments need to provide for multiple plausible responses and growth in understanding through errors.

15. Assessment needs to allow for creative and self-determining constructions and expressions of knowledge rather than focusing on predetermined problem-and-answer sets.

Fourth revision, dated January, 1993, of a proposal from the APA Task Force on Psychology in Education and the Mid-continent Regional Education Laboratory (McREL). This and subsequent revisions were based on input from a wide circulation of each draft among psychologists and educators. Since this project was begun, we have learned of other work on learning principles by Art Combs. While different in emphasis and detail, there is a congruence with regard to major factors that are essential to learning.